



EXPLANATION OF CROSS SECTION SYMBOLS:

WATER WELL

WELL ID NUMBER AND SURFACE ELEVATION (SOURCE: J-JOHNSTON; D-DARTON; F-FROELICH)

WELL CASING

WATER LEVEL

WELL SCREEN

BEDROCK SURFACE

REPORTED BEDROCK LITHOLOGY

BOREHOLE IN BEDROCK

BOTTOM ELEVATION

GEOTECHNICAL BORING SITES

ID NUMBER AND HIGHEST SURFACE ELEVATION

APPROXIMATE LATERAL AND VERTICAL EXTENT OF SITE ALONG CROSS SECTION LINE

WATER LEVEL

BOTTOM ELEVATION OF DEEPEST BORING

WATER LEVELS REPORTED IN WELLS AND GEOTECHNICAL BORINGS

WATER LEVEL MEASURED IN WELL OR CASED GEOTECHNICAL BORING COMPLETED IN THE CAMERON VALLEY SAND (LOWER AQUIFER OF THE POTOMAC FORMATION)

WATER LEVEL MEASURED IN 1976 FROM WELL COMPLETED IN CAMERON VALLEY SAND (JOHNSTON AND LARSON, 1977)

WATER LEVEL MEASURED IN WELL OR GEOTECHNICAL BORING COMPLETED IN OTHER AQUIFERS. MAY REPRESENT A COMPOSITE OR AVERAGE WATER LEVEL AT GEOTECHNICAL SITES WITH MANY BORINGS

OTHER SYMBOLS

47 SURFACE EXPOSURE. SOME EXCAVATIONS COINCIDE WITH GEOTECHNICAL BORING SITES

ORG ORGANIC ZONES REPORTED IN GEOTECHNICAL BORINGS FROM THE POTOMAC FORMATION, QUATERNARY ALLUVIUM, AND OTHER SEDIMENTS. INCLUDES WOOD, PEAT, LIGNITE, LEAVES, DARK ORGANIC SILT, AND OTHER ORGANIC MATERIAL

DUKE ST INTERSECTION WITH ANOTHER CROSS SECTION. CROSS SECTIONS ARE DISTINGUISHED BY NAME AND COLOR-CODED SECTION LINES AND TITLES

GEOLOGIC CROSS SECTION 2G – QUAKER LANE
Cross section 2G parallels Quaker Lane, beginning at Cameron Run near Oak Park, and continuing north to Four Mile Run below Fort Barnard in southern Arlington County. The section crosses the broad central core of the Alexandria highlands, a region that has experienced relatively little dissection by streams since the upland terraces were deposited in the late Tertiary. As a result, most of this section is considerably elevated above the modern stream valleys that bound either end. Labels and symbols along the cross section highlight several geotechnical boring sites and historical water wells, scattered exposures, and other sites of cultural, historical, and environmental interest. The specific location of the cross section is indicated on Plate 1 by a red-brown section line.

The cross sections are most informative when used together with the other maps, particularly Plate 5, to illustrate the third dimension of the map units. Contacts between map units are approximately located and may be gradational or transitional, particularly in the Potomac Formation. The abundance of control points (surface exposures, wells, geotechnical sites) along the cross section provides a general indication of the reliability of contact locations. Map units are depicted using the same colors, patterns, and labels as on Plate 5, and the explanation of map units on Plate 5 serves as the legend. The section also depicts some bedrock units and organic horizons that are present only in the subsurface and thus do not appear on Plate 5.

The dominant physiographic feature is the oversteepened, south-facing Hospital escarpment, across which the landscape rises sharply from near sea level at Cameron Run, to about 230 feet at Fort Williams, a distance of less than 3,000 feet. The escarpment is held up primarily by the Arell clay, a tough, fractured, silty clay with a high proportion of expandable clay minerals. Slopes on the escarpment commonly exceed 25% and locally approach 100%, especially in the upper part, and are dotted with landslide scars. These features, along with the absence of any intermediate upland terraces, strongly suggest that the escarpment formed primarily during the late Pleistocene and Holocene, with landslides and other slope processes playing a predominant role in its development. The position of Fort Williams in the section also illustrates the significance of

upland terrace rims as favored sites for the many Civil War forts that ring the District of Columbia.

The cross section depicts the inferred stratigraphy of the Potomac Formation beneath the central highlands, an area generally lacking in deep, high-resolution subsurface data. The Potomac strata are projected beneath the highlands based on their thicknesses, relations to other members, and other characteristics observed at exposures and geotechnical boring sites in adjacent areas where they are close to the surface, such as along the Hospital escarpment and the major stream valleys. Despite relatively good control on the uppermost parts of the Potomac Formation in the highlands, relations at depth remain largely conjectural.